**Crests, the ultimate challenge!**   
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 With the introduction of Crests to the Shield competitions, many more breeders will be trying to produce this variety. The motto of the Crested Club is "Crests the ultimate challenge." After reading this article you will understand why.

 If you are one of the lucky ones taking on this variety, here is a genetic lesson for you to absorb. If you don't understand something re read it, it is important. If you are one of the knockers of the variety read on and see why this variety is the ultimate challenge.

 The genetics and how to breed this variety is a little more complicated than other varieties of budgerigars. Although in essence they are a dominant variety, they seem to have modifiers, which limit the number of visuals produced. The old Australian Dominant Pied variety suffered a similar affliction, in that Pied breeders were lucky to produce 1 chick from a nest of 4 5. The Crest is worse than this and breeders must be prepared for huge wastage.

 As most fanciers know, the Crest come in three visual forms, Full, Half and tuft. These forms also have a range from good to bad in the crest development. Some you would call 3/4's and some have 1 or 2 feathers twisted on the head. This latter form is often called a Crestbred by breeders as the crest cannot be seen once the feathers develop. I believe that they are in fact a tuft genetically. If the bird is capable of producing one feather which is distorted (through known crested genes) it should be called a tuft for genetic and breeding records.

 On to the breeding records. This is where the lessons begin, I hope you don't get lost.

 In many books and articles the Initiator theory is the most quoted with Initiator and Determining genes. This is where most people get bamboozled. Here is my simplified version for you to try to digest.

 The three forms of crests have a different genetic code, ie;  
Full Circular     AABB, AABb - The AABB is a double factor form, AABb is the single factor.  
Half Circular    AaBB  
Tufted             AaBb

 These are the only codes we will work with and when we see these combinations of letters you can relate these back to these forms of crest.

An example pairing;  
AaBb (Tuft) x AaBb (Tuft)  
The possible letter combinations from this pairing are:  
AABB - AABb - AAbB - AAbb   
AaBB - AaBb - AabB - Aabb   
aABB - aABb - aAbB - aAbb   
aaBB - aaBb - aabB - aabb   
It should be noted that the combinations of aA & bB are the same as Aa & Bb thus the letters can be turned around and the capital is always first (for case of recognition).  
A capital letter represents a bird carrying a crest gene.

 The above matrix of letter combinations shows us what type of crests can be produced from the pairing of tuft to tuft, ie, Out of 16 possible combinations;

 1 bird will be a full circle double factor (AABB) 2 birds will be full circles single factors (AABb) 2 birds will be Half circles (AaBB) 4 birds will be Tufts (AaBb) 6 birds will be Crestbred carrying a gene on either side (capital letter) 1 bird will be a Normal bird carrying no crest genes.

 The problem comes knowing which birds are Crestbred and which are normal! Thus you can see the dilemma, two crests have been put together and will produce chicks which no crest genes. Unlike other varieties, not even a test mating will reveal these birds as it is possible to produce crests from normals. Identifying the crestbreds is impossible'?

 The other thing to mention is the bird produced as a double factor (AABB) would be extremely valuable, almost priceless. Every chick produced from this bird would be a Tuft! 1 have never heard of one of these birds being produced, if anyone has I stand corrected. 1 believe the Lethal gene often mentioned in Crests comes into play with this genetic form and they never survive.

 The above pairing example would seem to indicate that the production of crests is easy, after all out of 16 possible combinations, 9 (more than half) will be crests. This is certainly not the case and this is where the unknown suppressing gene somehow comes into effect. There are two ways of producing known crestbreds, pair either a full circular to a normal or a half to a normal. If anyone tries to sell you a crest bred not out of one of these two forms, there is no way of telling if it is indeed a Crestbred. For homework write down the pairings of different crests together and crests to normals. Try and predict the outcome of the pairings.

 Lets do one more pairing together:   
Aabb (Crestbred) x aaBb (crestbred)  
AaBb - Aabb - AaBb - Aabb  
AaBb - Aabb - AaBb - Aabb  
aaBb - aabb - aaBb - aabb  
aaBb - aabb - aaBb - aabb  
As you can see from the above it is possible in theory, to produce Crests , in this case tufts, from two normal looking birds, if you knowtheir genetic makeup.

 You can now see that what is meant by wastage. Crestbreds and normals produced in the same nest should be discarded as you cannot be sure which are crest breds. The challenge just to produce crests year in year out, is huge, but add in a program of improvement of the variety and you can see why Crests are, the ultimate challenge.